In the Claims:

Please cancel claims 1-17. Please add new claims 18-41. The claims are as follows:

1-17. (Canceled)

18. (New) A computer-implemented method for generating an n-dimensional matrix presentation of at least part of an m-dimensional database comprising data records and a plurality of key dimensions, each key dimension comprising a plurality of data value fields, each data value field having real data therein, said method comprising:

calculating a sorting sequence of fact numbers, said fact numbers identifying the data records;

calculating entry points for each dimension of the n-dimensional matrix presentation, each calculated entry point calculated to be linked with a corresponding fact number of the sorting sequence;

calculating a cardinality of the n-dimensional matrix presentation in dependence on the calculated sorting sequence and the calculated corresponding entry points; and

generating the n-dimensional matrix presentation based on the calculated cardinality and the calculated entry points.

19. (New) The method of claim 18, wherein calculating the entry points comprises placing each fact number of the sorting sequence into its corresponding calculated entry point within a column associated with the n-dimensional matrix presentation.

20. (New) The method of claim 19, said method further comprising:

prior to calculating the entry points, transforming the real data of each data value field to corresponding index values;

calculating the entry points using the index values and not using the real data;

after calculating the entry points and prior to generating the n-dimensional matrix presentation, transforming the index values back to the real data for generating the n-dimensional matrix presentation.

21. (New) The method of claim 20, wherein calculating the entry points comprises executing a sequence of linear vector operations on the sorting sequence and on the index values.

22. (New) The method of claim 21, said method further comprising:

generating a reference table comprising a column that includes the sorting sequence of fact values and columns including the index values of each key dimension.

generating, based on the reference table, a sorted sequence table correlating the sorting sequence with the index values of the first key dimension, said sorted sequence table having the index values of the first key dimension sorted therein;

generating, based on the reference table, a mapping table correlating the index values of a second key dimension of the plurality of key dimensions with the sorting sequence; and

generating, based on the reference table, a sort position pointer table comprising a count vector whose elements are pointers that point to selected entry points of said entry points, said selected entry points being a function of a count of a total number of distinct data records of the

database for each unique index value of the second key dimension.

23. (New) The method of claim 22, wherein executing the sequence of linear vector operations comprises sequentially executing first, second, and third vector operations for each fact number of the sorting sequence in the sorted sequence table, said each fact number being denoted as a given fact number,

wherein the first linear vector operation links the given fact number to a corresponding index value of the second key dimension in the mapping table;

wherein the second linear vector operation links the corresponding index value of the second key dimension, resulting from execution of the first linear vector operation, to a corresponding pointer of the count vector of the sort position pointer table, and following execution of the second linear vector operation the corresponding pointer in the count vector is incremented so as to point to a next entry point of said entry points; and

wherein the third linear vector operation uses the corresponding pointer prior to being incremented, resulting from execution of the second linear vector operation, to point to the entry point corresponding to the given fact number.

24. (New) The method of claim 20, wherein the index values of a first key dimension of the plurality of key dimensions is represented by a vector.

25. (New) The method of claim 20, wherein the index values are integers.

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26. (New) The method of claim 18, wherein said generating comprises generating a pivot view pertaining to the n-dimensional matrix presentation.

27. (New) The method of claim 18, wherein said generating comprises generating a virtual n-dimensional matrix pertaining to the n-dimensional matrix presentation.

28. (New) The method of claim 18, wherein n is equal to m.

29. (New) The method of claim 18, wherein n is unequal to m.

30. (New) A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to implement a computer-implemented method for generating an n-dimensional matrix presentation of at least part of an m-dimensional database comprising data records and a plurality of key dimensions, each key dimension comprising a plurality of data value fields, each data value field having real data therein, said method comprising:

calculating a sorting sequence of fact numbers, said fact numbers identifying the data records;

calculating entry points for each dimension of the n-dimensional matrix presentation, each calculated entry point calculated to be linked with a corresponding fact number of the sorting sequence;

calculating a cardinality of the n-dimensional matrix presentation in dependence on the

calculated sorting sequence and the calculated corresponding entry points; and

generating the n-dimensional matrix presentation based on the calculated cardinality and the calculated entry points.

31. (New) The computer program product of claim 30, wherein calculating the entry points comprises placing each fact number of the sorting sequence into its corresponding calculated entry point within a column associated with the n-dimensional matrix presentation.

32. (New) The computer program product of claim 31, said method further comprising:

prior to calculating the entry points, transforming the real data of each data value field to corresponding index values;

calculating the entry points using the index values and not using the real data;

after calculating the entry points and prior to generating the n-dimensional matrix presentation, transforming the index values back to the real data for generating the n-dimensional matrix presentation.

33. (New) The computer program product of claim 32, wherein calculating the entry points comprises executing a sequence of linear vector operations on the sorting sequence and on the index values.

34. (New) The computer program product of claim 33, said method further comprising:

generating a reference table comprising a column that includes the sorting sequence of

fact values and columns including the index values of each key dimension.

generating, based on the reference table, a sorted sequence table correlating the sorting sequence with the index values of the first key dimension, said sorted sequence table having the index values of the first key dimension sorted therein;

generating, based on the reference table, a mapping table correlating the index values of a second key dimension of the plurality of key dimensions with the sorting sequence; and

generating, based on the reference table, a sort position pointer table comprising a count vector whose elements are pointers that point to selected entry points of said entry points, said selected entry points being a function of a count of a total number of distinct data records of the database for each unique index value of the second key dimension.

35. (New) The computer program product of claim 34, wherein executing the sequence of linear vector operations comprises sequentially executing first, second, and third vector operations for each fact number of the sorting sequence in the sorted sequence table, said each fact number being denoted as a given fact number,

wherein the first linear vector operation links the given fact number to a corresponding index value of the second key dimension in the mapping table;

wherein the second linear vector operation links the corresponding index value of the second key dimension, resulting from execution of the first linear vector operation, to a corresponding pointer of the count vector of the sort position pointer table, and following execution of the second linear vector operation the corresponding pointer in the count vector is incremented so as to point to a next entry point of said entry points; and

wherein the third linear vector operation uses the corresponding pointer prior to being incremented, resulting from execution of the second linear vector operation, to point to the entry point corresponding to the given fact number.

36. (New) A computer system comprising a computer and a computer readable memory unit coupled to thecomputer, said memory unit containing instructions that when executed by the computer implement a method for generating an n-dimensional matrix presentation of at least part of an m-dimensional database comprising data records and a plurality of key dimensions, each key dimension comprising a plurality of data value fields, each data value field having real data therein, said method comprising:

calculating a sorting sequence of fact numbers, said fact numbers identifying the data records;

calculating entry points for each dimension of the n-dimensional matrix presentation, each calculated entry point calculated to be linked with a corresponding fact number of the sorting sequence;

calculating a cardinality of the n-dimensional matrix presentation in dependence on the calculated sorting sequence and the calculated corresponding entry points; and

generating the n-dimensional matrix presentation based on the calculated cardinality and the calculated entry points.

37. (New) The computer system of claim 36, wherein calculating the entry points comprises placing each fact number of the sorting sequence into its corresponding calculated entry point

within a column associated with the n-dimensional matrix presentation.

38. (New) The computer system of claim 37, said method further comprising:

prior to calculating the entry points, transforming the real data of each data value field to corresponding index values;

calculating the entry points using the index values and not using the real data;

after calculating the entry points and prior to generating the n-dimensional matrix presentation, transforming the index values back to the real data for generating the n-dimensional matrix presentation.

39. (New) The computer system of claim 38, wherein calculating the entry points comprises executing a sequence of linear vector operations on the sorting sequence and on the index values.

40. (New) The computer system of claim 39, said method further comprising:

generating a reference table comprising a column that includes the sorting sequence of fact values and columns including the index values of each key dimension.

generating, based on the reference table, a sorted sequence table correlating the sorting sequence with the index values of the first key dimension, said sorted sequence table having the index values of the first key dimension sorted therein;

generating, based on the reference table, a mapping table correlating the index values of a second key dimension of the plurality of key dimensions with the sorting sequence; and

generating, based on the reference table, a sort position pointer table comprising a count

vector whose elements are pointers that point to selected entry points of said entry points, said

selected entry points being a function of a count of a total number of distinct data records of the

database for each unique index value of the second key dimension.

41. (New) The computer system of claim 40, wherein executing the sequence of linear vector

operations comprises sequentially executing first, second, and third vector operations for each

fact number of the sorting sequence in the sorted sequence table, said each fact number being

denoted as a given fact number,

wherein the first linear vector operation links the given fact number to a corresponding

index value of the second key dimension in the mapping table;

wherein the second linear vector operation links the corresponding index value of the

second key dimension, resulting from execution of the first linear vector operation, to a

corresponding pointer of the count vector of the sort position pointer table, and following

execution of the second linear vector operation the corresponding pointer in the count vector is

incremented so as to point to a next entry point of said entry points; and

wherein the third linear vector operation uses the corresponding pointer prior to being

incremented, resulting from execution of the second linear vector operation, to point to the entry

point corresponding to the given fact number.